SANYO

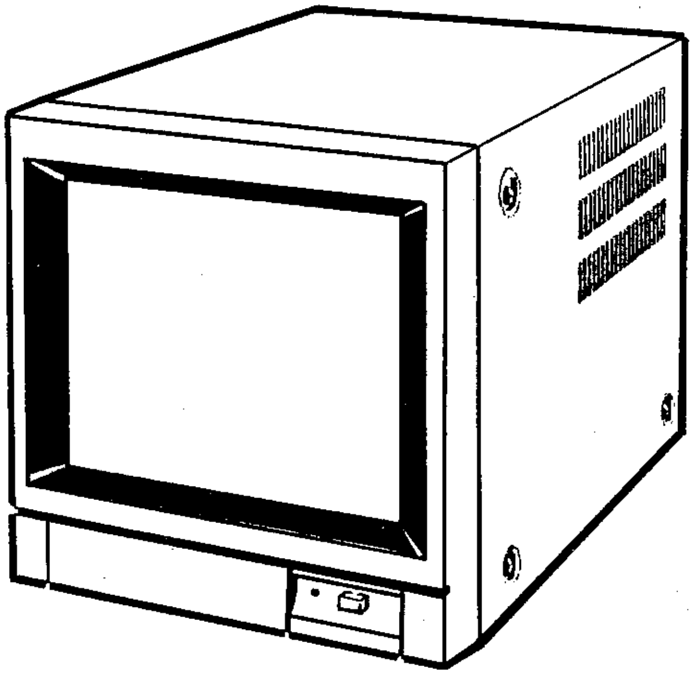
SERVICE MANUAL

Colour Video Monitor

Model No. VMC7509P

(Europe)

Service Ref.No. VMC7509P-00



PRODUCT CODE:113 049 00

Specifications

Rated Voltage . . . . AC 90V to 270V (Automatic)
Rated Frequency 50Hz/60Hz
Power Consumption . . . . 37 Watts
Colour System . . . . . . PAL
Video Input Signal Level..1.0 V p-p
Video Input Impedance. . . . 75 Ω
Picture Tube . . . . 22cm Diagonal,76 Degree.
Dimensions . . . . 223(Width)x354(Height)x227(Depth)mm
Weight . . . . 8 Kg

* Specifications subject to change without notice.

ORIGINAL VERSION
Chassis Series M1-10

Give complete "SERVICE REF. NO." for parts order or servicing, it is shown on the rating plate at the cabinet back of the unit.

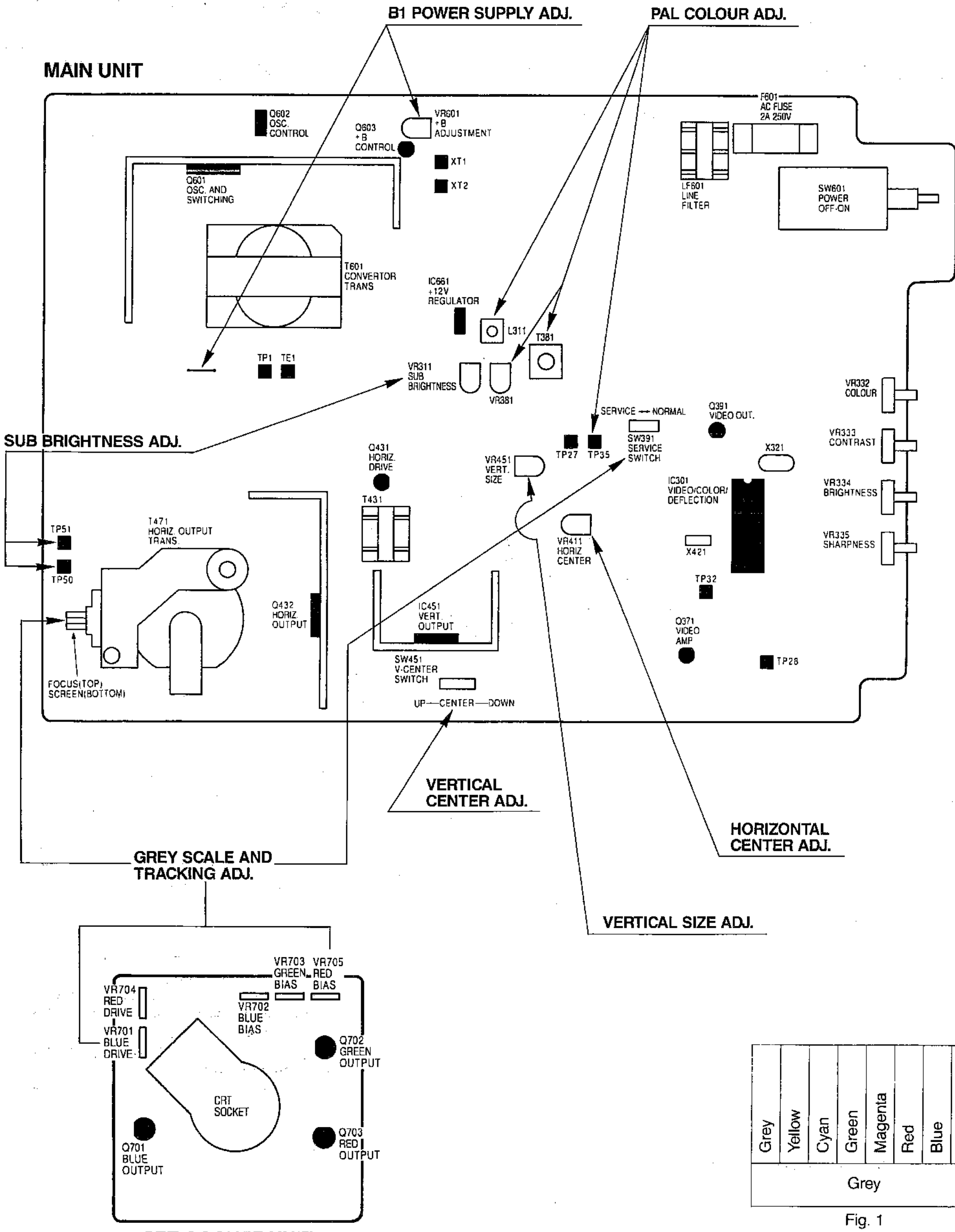
NOTE

This T.V. receiver will not work properly in a foreign countries where the television transmission system and power source differ from the design specifications.
Refer to the specifications for the design specifications.

BMFA

REFERENCE NO.WM-520085

INSTALLATION AND SERVICE ADJUSTMENT



CRT SOCKET UNIT

Grey	Yellow	Cyan	Green	Magenta	Red	Blue	Black
Grey							

Fig. 1

SAFETY PRECAUTIONS

An isolation transformer should be connected in the power line between the receiver and the AC line before any service is performed on the receiver.

INSTALLATION AND SERVICE ADJUSTMENTS

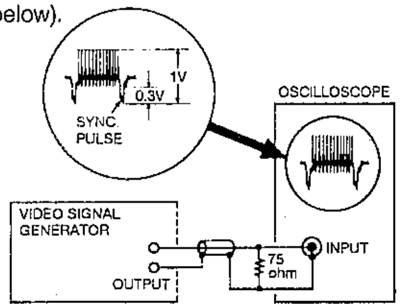
X-RADIATION PRECAUTION The primary source of X-RADIATION in television receiver is the picture tube. The picture tube is specially constructed to limit X-RADIATION emissions. For continued X-RADIATION protection, the replacement tube must be the same type as the original including suffix letter. Excessive high voltage may produce potentially hazardous X-RADIATION. To avoid such hazards, the high voltage must be maintained within specified limit. Refer to this service manual, high voltage adjustment for specific high voltage limits. If high voltage exceeds specified limits, take necessary corrective action. Carefully follow the instructions for high voltage adjustment to maintain the high voltage within the specified limits.

VIDEO INPUT CONNECTION

This set is designed for video signal reception. Input impedance is fixed at 75 ohms.

PREPARATION STEP

1. Adjust video signal at 1.0 volt p-p from the video signal (colour bar/dot crosshatch/mono-chrome circular pattern) generator (See below).



2. Connect video signal (colour bar/dot crosshatch/mono-chrome circular pattern) generator output to "VIDEO INPUT" at the rear of the set.

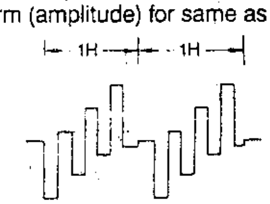
B1 POWER SUPPLY ADJUSTMENT

1. Connect DC meter to "TJ115V" and ground.
   Set the +B1 adjustment control (VR601) to mid-range.
2. Set brightness and contrast to minimum.
   Receive the colour bar pattern.
3. Adjust +B1 adjustment control for 115.7±0.2 volt DC.

COLOUR ADJUSTMENT (PAL)

Receive colour bar pattern. (See Fig. 1)

Set's controls: brightness .... maximum
colour .... maximum

	ADJUST	REMARKS
Connect the oscilloscope to TP35 (+ lead)		
1	VR381, T381	Adjust VR381, T381 to obtain each 1H waveform (amplitude) for same as shown below.  B-Y WAVEFORM **Figure 2**
2	L311	Adjust L311 to obtain proper waveform as shown in Figure 2.

GREY SCALE AND TRACKING ADJUSTMENT

Receive the mono-chrome circular pattern.

1. Set the BRIGHTNESS and the CONTRAST to maximum, the COLOUR to normal.
2. Set the SERVICE SWITCH (SW391) at the service side.
3. Set the DRIVE VOLUME (VR704 and VR701) at their mechanical center.
4. Set the BIAS VOLUME (VR705, VR703 and VR702) to minimum. (fully counter clockwise).
5. Turn the SCREEN VOLUME to obtain just visible one coloured line.
6. Adjust each BIAS VOLUME (VR702-BLUE, VR703-GREEN and VR705-RED) alternately until a dim white line produced.
7. Set the SERVICE SWITCH (SW391) at the normal side.
8. Adjust the DRIVE VOLUME (VR701-BLUE and VR704-RED) alternately to produce normal black and white picture.
9. Check for proper grey scale tracking at all brightness levels.

NOTE If grey scale adjustment is made after picture tube replacement, check high voltage and sub-brightness adjustments.

FOCUS ADJUSTMENT

Adjust focus control on the left side of the chassis for well scanning lines.

SUB BRIGHTNESS ADJUSTMENT

1. Connect a DC meter between "TP51" (positive lead) and "TP50" (negative lead) on main unit.
2. Receive the circular pattern.
3. Set brightness to maximum and contrast to minimum.
4. Adjust sub brightness control (VR311) for 0.1V.

NOTE: If picture tube replace. Check Sub-brightness adjustment.

HIGH VOLTAGE CHECK

1. Receive the circular pattern.
2. Set brightness and contrast to maximum.
3. Connect a high voltage probe to anode lead at picture tube.
4. High voltage must measure between 21.1~22.6KV.

NOTE: If picture tube replace, check high voltage.

HORIZONTAL CENTER ADJUSTMENT

1. Receive the mono-chrome circular pattern.
2. Set the brightness and contrast to maximum.
3. Adjust Video Phase (VR411) for optimum horiz center position.

VERTICAL CENTER ADJUSTMENT

1. Receive the circular pattern.
2. Select SW451 for optimum picture vertical center.

VERTICAL SIZE ADJUSTMENT

1. Receive the mono-chrome circular pattern.
2. Adjust vertical size (VR451) control for full scan.

PURITY AND CONVERGENCE ADJUSTMENTS

CAUTION; Convergence and Purity have been factory aligned. Do not attempt to tamper with these alignments. However, the effects of adjacent receiver components, replacement of picture tube or deflection yoke, or through inadvertent loosening of the lock ring may require the need to readjust purity and convergence. If adjustment is required the adjustments should be made in the following sequence.

PURITY ADJUSTMENTS

1. Place the picture tube face north or south and demagnetize the picture tube and receiver using an external degaussing coil. When replacing picture tube or deflection yoke, mount deflection yoke and purity-convergence magnets assembly properly, see figures 5 and 6.
2. Turn Red and Blue guns off and provide only Green raster. Rotate Screen control on the Main Signal Board to fully counterclockwise (raster becomes dark). Rotate Red and Blue Bias controls fully counterclockwise. Slowly rotate Green Bias control clockwise to produce Green raster.
3. Loosen the screw holding the Deflection Yoke and slide the Deflection Yoke backward as far as possible, and remove the 3 Rubber Wedges. Loosen Locking Ring (some models).
4. Rotate and spread the Tabs of the two Purity Magnets to center the vertical green belt in the picture screen. The Purity Magnets are also adjusted to obtain vertical centering of the raster.
5. Slowly slide the Deflection Yoke forward until a uniform green screen is obtained.
6. Check the purity of the red and blue screens for uniformity, turn off other colors to check this (use bias controls). Readjust the yoke position if necessary until all screens are pure.
7. Adjust each Bias control and screen control to obtain white raster. Refer to Gray Scale Adjustment. If part of the picture screen is colored, adjust the Deflection Yoke position forward or backward slightly.
8. Tighten the mounting screw of the Deflection Yoke. Adjust Convergence next.

CONVERGENCE ADJUSTMENT

CENTER AREA CONVERGENCE

1. Use a dot-crosshatch pattern signal.
2. Turn Red and Blue guns on and turn off Green gun. Adjust the angle between the Tabs of the Four Pole Magnet 1 and 2, and superimpose the Red and Blue vertical lines in the center area of the picture screen. Refer to figure 3.
3. keeping the mutual angle of the Tabs of the Four Pole Magnet turn them together to superimpose the Blue and Red horizontal lines in the center area of the picture screen. Refer to figure 3.
4. Turn Green gun on and adjust Six Pole Magnet 3 and 4 so that the Green line superimposes on the Red/Blue lines. This is the same procedure used in steps 2 and 3. Refer to figure 4.

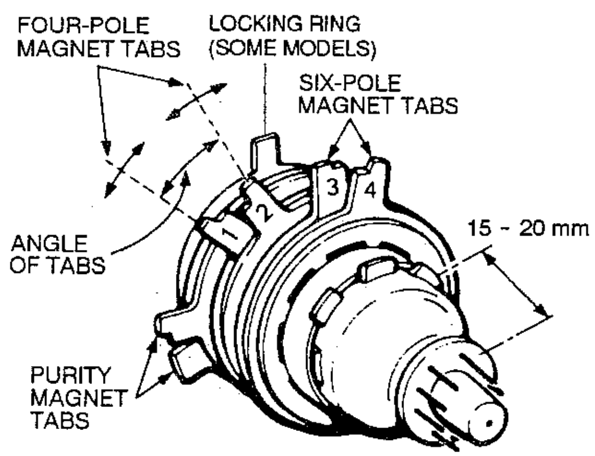


Figure-1 Purity and Convergence Magnets

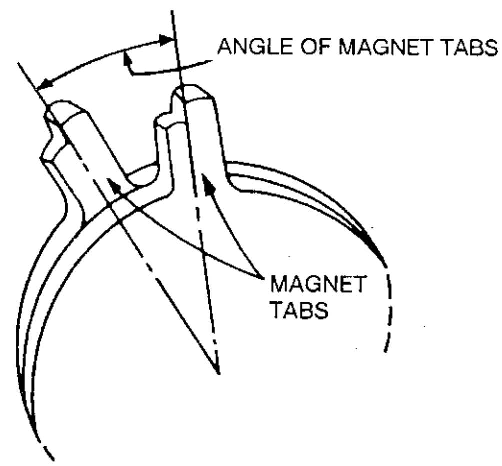


Figure-2 Adjustment Magnet

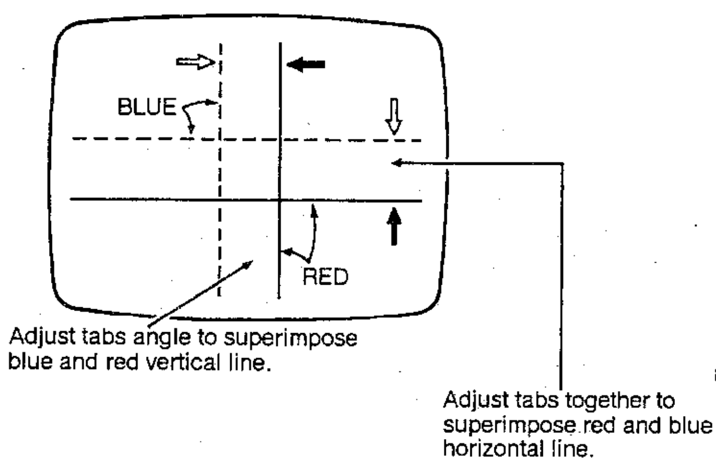


Figure-3 Blue and Red Line Movement

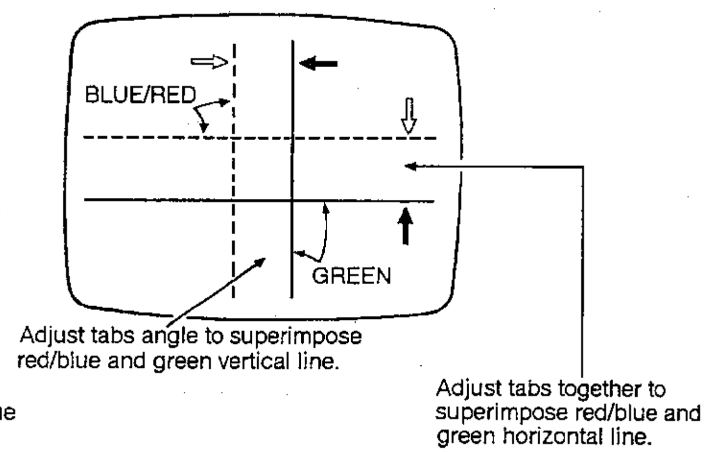


Figure-4 Blue/Red and Green Line Movement

CONVERGENCE FOR OUTER AREA

1. Slightly loosen the screw holding the Deflection Yoke. Refer to figure 6.
2. Adjust the Deflection Yoke to converge the detail in the outer area of the picture screen by orbital movement of the front of the Yoke, then secure the Deflection Yoke in appropriate position by putting the wedges as illustrated. Refer to figure 6 and 7. Tighten screw holding the Deflection Yoke.

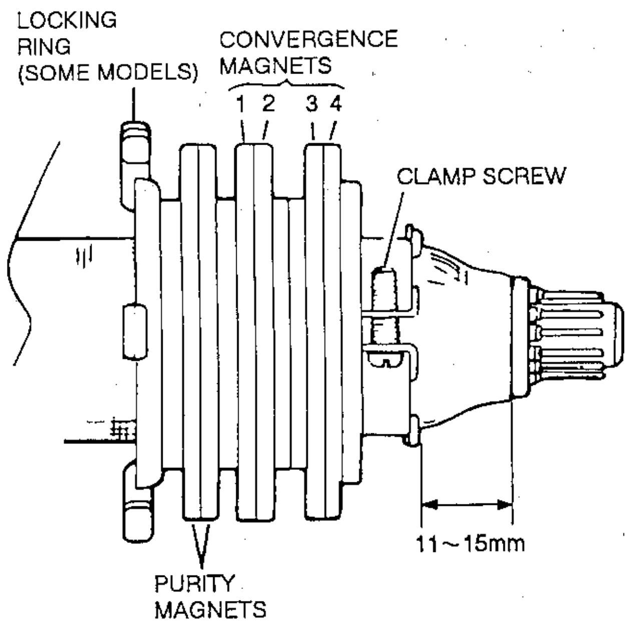


Figure-5 Convergence and Purity Magnets Assembly Positioning

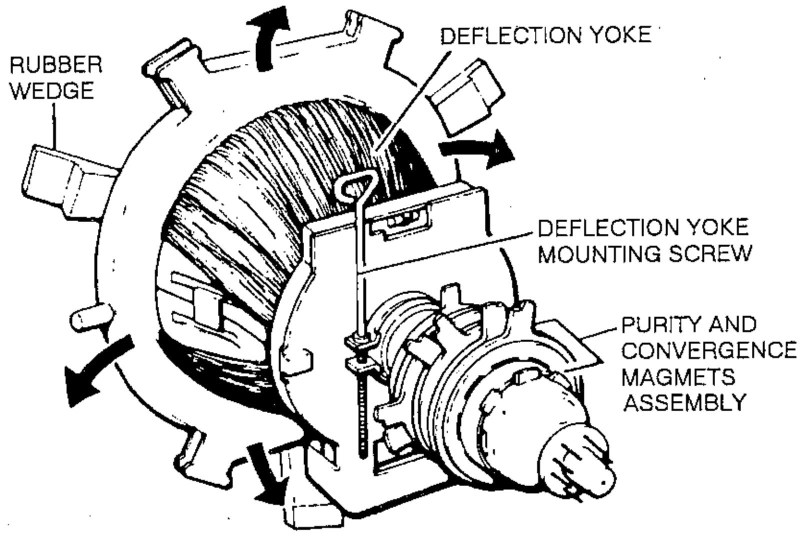
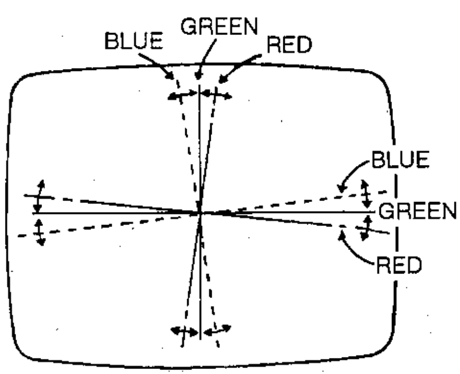
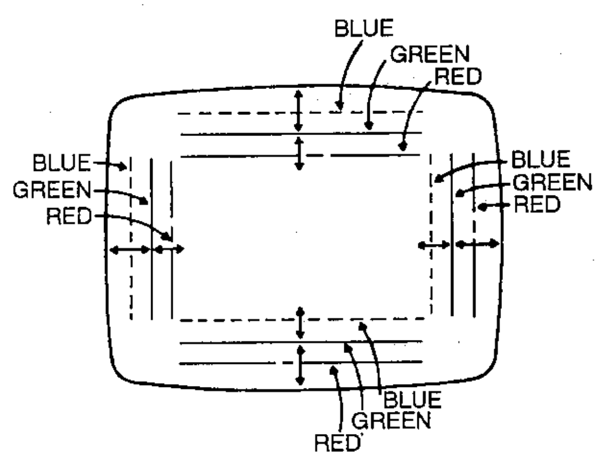


Figure-6 Adjustment Deflection Yoke



LINE MOVEMENT WHEN ADJUSTING FRONT OF YOKE UP AND DOWN



LINE MOVEMENT WHEN ADJUSTING FRONT OF YOKE SIDE TO SIDE

Figure-7 Lines Movement

MECHANICAL DISASSEMBLES

CABINET REMOVAL

1. Refer to Figure 1 and remove screws (12 screws).
2. Remove cabinet and cabinet back completely.

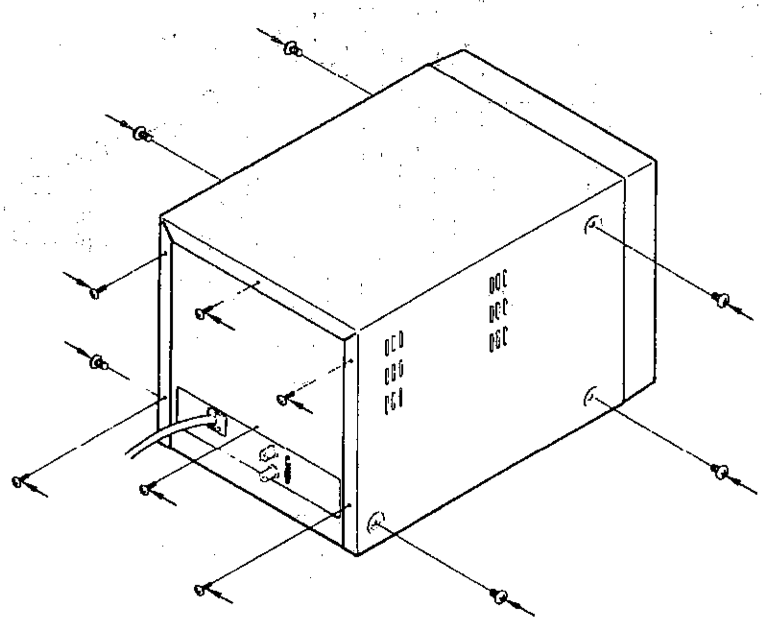


Figure-1 CABINET REMOVAL

CHASSIS REMOVAL

1. Remove cabinet (refer to Cabinet Removal).
2. Refer to Figure 2 and remove screws (6 screws).
3. Disconnect Pix tube socket, deflection socket (KDY), pix tube grounding lead solder and anode lead.

PIX TUBE REMOVAL

CAUTION: Do not disturb the deflection yoke or magnet assembly on the PIX tube neck. Care must be taken to keep these assemblies intact.

1. Remove cabinet and chassis (refer to Cabinet Removal and Chassis Removal Instructions).
2. Place bezel front face down on a soft surface.
3. Remove four corner screws securing pix tube to bezel.
4. GENTLY lift out pix tube and place it on a soft surface.
5. Install replacement pix tube in reverse order.

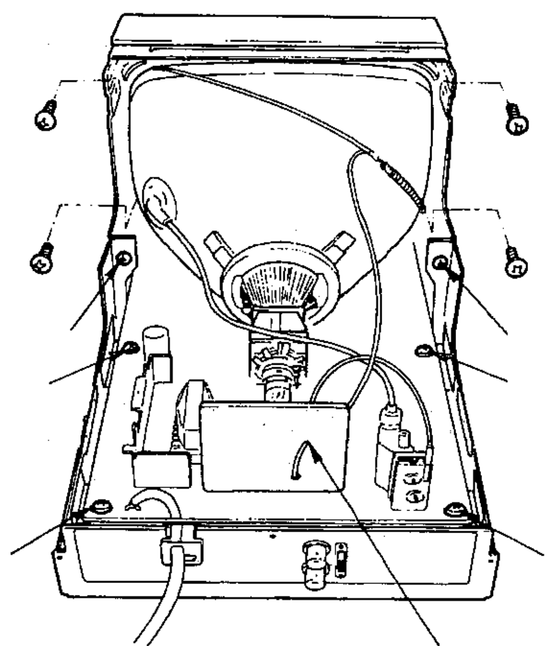
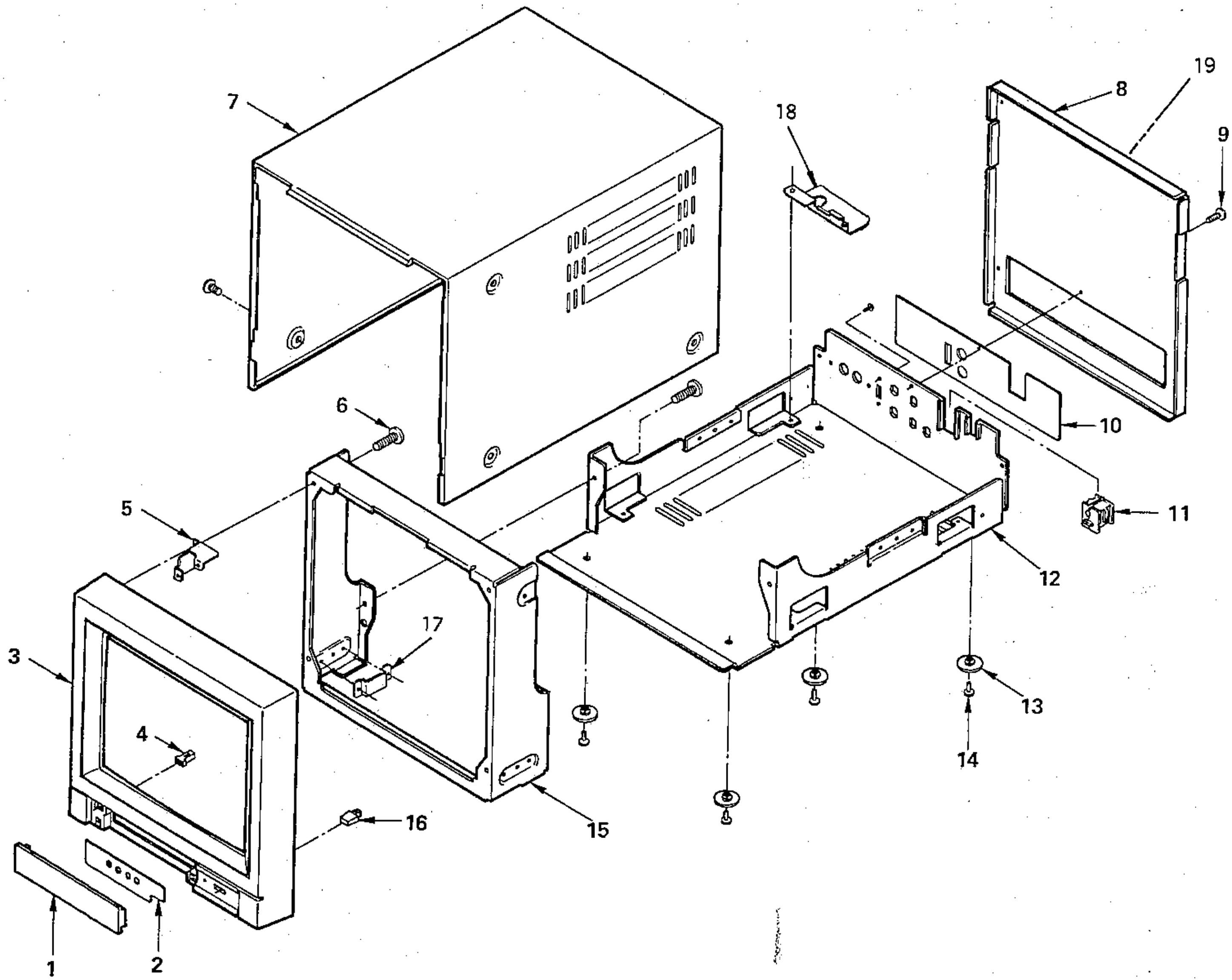


Figure-2 Chassis Removal

Cabinet Parts List

Note: Parts order must contain Service Ref.No.,Key No.,Part No. and Description.



Key No.	Part No.	Description
1.	610 214 1399	Door
2.	610 222 2104	Control Dec. Sheet
3.	610 214 1382	Escutcheon
4.	610 104 2505	Push Latch
5.	610 214 1238	CRT Mounting Bracket(4 used)
6.	411 076 2407	Screw 4 X 6 (6 used)
7.	610 214 1207	Cabinet Top
8.	610 214 1245	Back Cover
9.	411 075 9803	Screw 3 X 8 (6 used)
10.	610 218 0190	Rear Dec. Sheet

Key No.	Part NO.	Description
11.	610 102 3498	AC Cord Clamp
12.	610 214 1214	Cabinet Bottom
13.	610 130 9530	Foot (4 used)
14.	610 130 9523	Foot Mounting Pin (4 used)
15.	610 214 1221	CRT Mounting Frame
16.	610 029 1928	Push Button Assembly
17.	610 222 2180	Screw Cover (2 used)
18.	610 217 2317	PCB Mounting Bracket
19.	610 223 6927	Rating Sheet

REPAIR PARTS LIST

PRODUCT SAFETY NOTICE

PRODUCT SAFETY SHOULD BE CONSIDERED WHEN A COMPONENT REPLACEMENT IS MADE IN ANY AREA OF A RECEIVER COMPONENTS INDICATED BY A MARK ⚠ IN THIS PARTS LIST AND THE CIRCUIT DIAGRAM SHOW COMPONENTS WHOSE VALUE HAVE SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. IT IS PARTICULARLY RECOMMENDED THAT ONLY PARTS SPECIFIED ON THE FOLLOWING PARTS LIST BE USED FOR COMPONENTS REPLACEMENT POINTED OUT BY THE MARK.

NOTE: PART ORDER MUST CONTAIN SERVICE REF.NO.,REF.NO.,PART NO.AND DESCRIPTION

610 219 9765(MAIN UNIT-BMFA)

UE2149

TRANSISTORS

Ref. No.	Part No.	Description
Q371	406 000 6804	TR 2SA1015-GR(SAN)
	OR 405 001 7407	TR 2SA1015-O(SAN)
	OR 405 001 7605	TR 2SA1015-Y(SAN)
	OR 405 004 3109	TR 2SA564A-Q(CU)
	OR 405 004 3208	TR 2SA564A-R(CU)
	OR 405 004 4205	TR 2SA608-E-CTV-NP
	OR 405 004 4809	TR 2SA608-F-CTV-NP
	OR 405 006 1103	TR 2SA933-Q
	OR 405 006 1202	TR 2SA933-R
Q391	405 001 7407	TR 2SA1015-O(SAN)
	OR 405 001 7605	TR 2SA1015-Y(SAN)
Q431	405 013 6801	TR 2SC2274-E
	OR 405 013 7006	TR 2SC2274-F
Q432	405 022 6601	TR 2SD1649-CTV-YB
Q601	405 022 8506	TR 2SD1710-CTV-YB
Q602	405 058 0208	TR 2SC3807-R-CTV-YA
Q603	406 000 6804	TR 2SA1015-GR(SAN)
	OR 405 001 7407	TR 2SA1015-O(SAN)
	OR 405 001 7605	TR 2SA1015-Y(SAN)
	OR 405 004 3109	TR 2SA564A-Q(CU)
	OR 405 004 3208	TR 2SA564A-R(CU)
	OR 405 004 4205	TR 2SA608-E-CTV-NP
	OR 405 004 4809	TR 2SA608-F-CTV-NP
	OR 405 006 1103	TR 2SA933-Q
	OR 405 006 1202	TR 2SA933-R

INTEGRATED CIRCUITS

Ref. No.	Part No.	Description
IC301	409 035 8409	IC M51308SP
IC451	409 019 5608	IC LA7830
IC661	409 026 9507	IC L78M12-RA

CAPACITORS

Ref. No.	Part No.	Description		
C301	403 085 7306	NP-ELECT	10U M	25V
C302	403 012 4101	CERAMIC	15P J	50V
C305	403 069 8305	CERAMIC	0.01U Z	50V
C311	403 069 8305	CERAMIC	0.01U Z	50V
C315	403 011 3808	CERAMIC	120P J	50V
C316	403 051 0607	ELECT	4.7U M	50V
C320	403 067 6204	MT-COMPO	0.15U J	50V
	OR 403 166 8307	MT-POLYEST	0.15U J	63V
C321	403 044 1703	ELECT	470U M	16V
C322	403 069 8305	CERAMIC	0.01U Z	50V
C323	403 069 8305	CERAMIC	0.01U Z	50V
C324	403 069 8305	CERAMIC	0.01U Z	50V
C325	403 048 6308	ELECT	0.47U M	50V
C326	403 069 8305	CERAMIC	0.01U Z	50V
C327	403 086 2607	NP-ELECT	1U M	50V
C328	403 069 8305	CERAMIC	0.01U Z	50V
C329	403 060 0506	POLYESTER	2700P K	50V
	OR 403 060 1107	POLYESTER	2700P K	50V
C332	403 049 0008	ELECT	1U M	50V
C333	403 041 8804	ELECT	10U M	16V
C356	403 049 0008	ELECT	1U M	50V
C361	403 028 2009	CERAMIC	56P J	50V
C362	403 011 3808	CERAMIC	120P J	50V
C364	403 069 8305	CERAMIC	0.01U Z	50V
C372	403 039 6508	ELECT	100U M	10V
C381	403 069 8305	CERAMIC	0.01U Z	50V
C382	403 069 8305	CERAMIC	0.01U Z	50V
C384	403 013 1901	CERAMIC	150P J	50V
C386	403 069 8305	CERAMIC	0.01U Z	50V
C388	403 019 7709	CERAMIC	27P J	50V
C391	403 073 2900	CERAMIC	390P K	50V
C392	403 073 2900	CERAMIC	390P K	50V
C393	403 073 2900	CERAMIC	390P K	50V
C401	403 051 0607	ELECT	4.7U M	50V
C402	403 071 2407	CERAMIC	1800P K	50V
C411	403 069 0507	CERAMIC	1000P K	50V
C412	403 026 0809	CERAMIC	47P J	50V
C421	403 042 4805	ELECT	1000U M	16V
C422	403 060 8205	POLYESTER	0.033U K	50V
	OR 403 060 8809	POLYESTER	0.033U K	50V
C423	403 085 8105	NP-ELECT	2.2U M	25V
C424	403 059 5901	POLYESTER	0.022U K	50V
	OR 403 059 6700	POLYESTER	0.022U K	50V
C425	403 058 0303	POLYESTER	1500P J	50V
	OR 403 058 0907	POLYESTER	1500P J	50V
C431	403 062 6902	POLYESTER	0.056U K	50V
	OR 403 062 7404	POLYESTER	0.056U K	50V
C432	403 076 3102	CERAMIC	3900P K	500V
C433	403 075 7101	CERAMIC	1000P K	500V
C434	403 054 0703	ELECT	47U M	35V
C435	403 062 2201	POLYESTER	0.47U K	50V
	OR 403 062 2805	POLYESTER	0.47U K	50V
⚠ C438	404 030 6306	MT-POLYPRO	3300P J	1.5K
	OR 404 030 6504	MT-POLYPRO	3300P J	1.5K
	OR 403 173 4309	MT-POLYPRO	3300P J	2K
⚠ C439	403 165 7806	CERAMIC	150P J	3K
	OR 403 078 2103	CERAMIC	150P J	3K
C441	403 082 7804	POLYPRO	0.18U J	200V
C451	403 053 2104	ELECT	220U M	35V
C452	403 054 1502	ELECT	470U M	35V
C455	403 049 0008	ELECT	1U M	50V
C457	403 061 3209	POLYESTER	0.039U J	50V
	OR 403 061 3803	POLYESTER	0.039U J	50V
C458	403 057 1905	POLYESTER	0.1U J	50V
	OR 403 057 2605	POLYESTER	0.1U J	50V
C459	403 091 9004	TA-SOLID	1U K	25V
C460	403 063 2101	POLYESTER	0.068U K	50V
	OR 403 063 2705	POLYESTER	0.068U K	50V
C461	403 045 2006	ELECT	1000U M	25V
C462	403 064 1301	POLYESTER	0.1U K	100V
C463	403 058 8200	POLYESTER	1800P K	50V
	OR 403 058 8705	POLYESTER	1800P K	50V
C465	403 036 7805	CERAMIC	82P K	500V
C466	403 028 1705	CERAMIC	56P J	50V
C471	403 119 1409	ELECT	2.2U M	100V
C475	403 077 8205	CERAMIC	4700P P	2K
⚠ C601	403 007 9903	MT-POLYEST	0.1U M	250V
C603	403 076 7100	CERAMIC	1000P M	1K

Ref. No.	Part No.	Description
C604	403 076 7100	CERAMIC 1000P M 1K
C605	403 076 7100	CERAMIC 1000P M 1K
C606	403 076 7100	CERAMIC 1000P M 1K
C608	404 001 0005	ELECT 100U M 400V
	OR 404 031 1003	ELECT 100U M 400V
C611	403 165 8407	CERAMIC 680P K 2K
	OR 403 077 9103	CERAMIC 680P K 2K
C613	403 055 3802	ELECT 4.7U M 160V
C614	403 067 5603	MT-COMPO 0.1U J 50V
	OR 403 166 6808	MT-POLYEST 0.1U J 63V
C616	403 057 6801	POLYESTER 0.012U J 50V
	OR 403 057 7303	POLYESTER 0.012U J 50V
C651	403 075 7101	CERAMIC 1000P K 500V
	OR 403 075 7804	CERAMIC 1000P P 500V
C652	403 165 9107	CERAMIC 1200P K 2K
	OR 403 077 3408	CERAMIC 1200P K 2K
C653	403 165 9107	CERAMIC 1200P K 2K
	OR 403 077 3408	CERAMIC 1200P K 2K
C656	404 042 4703	ELECT 220U M 160V
C658	403 047 5005	ELECT 470U M 25V
C659	403 054 1502	ELECT 470U M 35V
C667	403 047 5005	ELECT 470U M 25V
⚠ C671	404 008 2705	CERAMIC 470P K 400V

RESISTORS

Ref. No.	Part No.	Description
R301	401 025 1605	CARBON 1.5K JA 1/6W
R302	401 025 7805	CARBON 2.2K JA 1/6W
R306	401 027 2600	CARBON 5.6K JA 1/6W
R307	401 027 8602	CARBON 8.2K JA 1/6W
R311	401 026 4605	CARBON 33K JA 1/6W
R315	401 024 7400	CARBON 10K JA 1/6W
R322	401 026 7804	CARBON 3.9M JA 1/6W
R324	401 025 1902	CARBON 15K JA 1/6W
R326	401 024 9701	CARBON 12K JA 1/6W
R328	401 026 7408	CARBON 39K JA 1/6W
R330	401 024 8001	CARBON 1M JA 1/6W
R334	401 024 9701	CARBON 12K JA 1/6W
R336	401 027 3003	CARBON 56K JA 1/6W
R337	401 025 8208	CARBON 22K JA 1/6W
R338	401 025 4606	CARBON 18K JA 1/6W
R339	401 027 8602	CARBON 8.2K JA 1/6W
R341	401 027 8305	CARBON 820 JA 1/6W
R342	401 026 7002	CARBON 3.9K JA 1/6W
R343	401 026 1307	CARBON 27K JA 1/6W
R344	401 027 8602	CARBON 8.2K JA 1/6W
R361	401 026 9600	CARBON 470 JA 1/6W
R362	401 026 7408	CARBON 39K JA 1/6W
R372	401 024 7400	CARBON 10K JA 1/6W
R374	401 027 2303	CARBON 560 JA 1/6W
R376	401 024 7400	CARBON 10K JA 1/6W
R377	401 026 9907	CARBON 4.7K JA 1/6W
R378	401 024 6700	CARBON 100 JA 1/6W
R381	401 027 2303	CARBON 560 JA 1/6W
R382	401 026 6609	CARBON 390 JA 1/6W
R384	401 027 2303	CARBON 560 JA 1/6W
R389	401 026 4308	CARBON 3.3K JA 1/6W
R390	401 025 1308	CARBON 150 JA 1/6W
R391	401 026 4308	CARBON 3.3K JA 1/6W
R392	401 025 1308	CARBON 150 JA 1/6W
R393	401 026 4308	CARBON 3.3K JA 1/6W
R394	401 025 1308	CARBON 150 JA 1/6W
R395	401 026 9907	CARBON 4.7K JA 1/6W
R396	401 026 3905	CARBON 330 JA 1/6W
R397	401 026 0409	CARBON 27 JA 1/6W
R398	401 027 8305	CARBON 820 JA 1/6W
R401	401 026 0607	CARBON 270 JA 1/6W
R402	401 025 8703	CARBON 220K JA 1/6W
R410	401 022 3107	CARBON 6.8K JA 1/4W
R411	401 027 5502	CARBON 6.8K JA 1/6W
R412	401 025 1902	CARBON 15K JA 1/6W
R413	401 026 7002	CARBON 3.9K JA 1/6W
R414	401 024 7004	CARBON 1K JA 1/6W
R421	401 018 3807	CARBON 3.3K JA 1/4W
R422	401 026 4902	CARBON 330K JA 1/6W
R423	401 027 2600	CARBON 5.6K JA 1/6W
R424	401 026 0607	CARBON 270 JA 1/6W
R431	401 026 4308	CARBON 3.3K JA 1/6W
R432	401 026 3905	CARBON 330 JA 1/6W
R433	401 024 7004	CARBON 1K JA 1/6W
R434	401 007 1104	CARBON 1K JA 1/2W
R435	401 011 1602	CARBON 680 JA 1/2W
R436	402 057 9102	WIRE WOUND 39 KA 6W
	OR 402 057 9201	WIRE WOUND 39 KA 6W
R442	401 008 6702	CARBON 220 JA 1/2W
R444	401 058 3706	OXIDE-MT 1K JA 1W
R450	401 009 1508	CARBON 2.7K JA 1/2W
R451	401 027 2303	CARBON 560 JA 1/6W
R453	401 026 9907	CARBON 4.7K JA 1/6W
R455	401 027 5205	CARBON 680 JA 1/6W
R456	401 012 7801	CARBON 100K GA 1/4W
R457	401 026 1307	CARBON 27K JA 1/6W
R458	401 025 0004	CARBON 120K JA 1/6W
R459	401 027 0309	CARBON 47K JA 1/6W
R460	401 024 7400	CARBON 10K JA 1/6W
R462	401 011 4306	CARBON 8.2 JA 1/2W
R463	401 010 7605	CARBON 560 JA 1/2W
R471	401 020 3901	CARBON 470K JA 1/4W
R472	401 020 2904	CARBON 47K JA 1/4W
R473	401 012 5708	CARBON 1K JA 1/4W
R475	401 001 7607	SOLID 270K KA 1/2W
R478	401 062 3907	OXIDE-MT 5.6 JA 1W
R601	402 011 8400	WIRE WOUND 3.9 KA F 6W
R603	401 069 1708	OXIDE-MT 68 JA 2W
R604	401 007 5805	CARBON 120K JA 1/2W
R606	401 007 5805	CARBON 120K JA 1/2W
R607	401 066 9004	OXIDE-MT 27 JA 2W
R609	401 007 4204	CARBON 120 JA 1/2W
R611	401 018 3401	CARBON 3.3K GA 1/4W
R612	401 046 8904	MT-FILM 3.3K FA 1/4W
R613	401 044 0108	MT-FILM 18K FA 1/4W
R614	401 027 2600	CARBON 5.6K JA 1/6W
R615	401 027 3003	CARBON 56K JA 1/6W
R616	401 016 4806	CARBON 22K JA 1/4W
R617	401 018 3807	CARBON 3.3K JA 1/4W
R618	401 015 2209	CARBON 1.8K GA 1/4W
R651	401 006 8104	CARBON 1.2 JA 1/2W
R652	401 006 8500	CARBON 1.5 JB 1/2W
R666	401 026 9907	CARBON 4.7K JA 1/6W
⚠ R671	402 000 8305	SOLID 5.6M KA 1/2W
⚠ R672	402 000 8305	SOLID 5.6M KA 1/2W

VARIABLE RESISTORS

Ref. No.	Part No.	Description
VR311	610 019 3932	VARIABLE RESISTOR B-50K
	OR 610 020 4829	VARIABLE RESISTOR
	OR 610 019 3499	VR B-50K
	OR 610 019 3505	VR B-50K
VR332	610 212 7140	VR B-10K
	OR 610 212 7157	VR B-10K
VR333	610 212 7140	VR B-10K
	OR 610 212 7157	VR B-10K
VR334	610 212 7140	VR B-10K
	OR 610 212 7157	VR B-10K
VR335	610 215 7581	VR B-500
	OR 610 215 7598	VR B-500
VR381	610 020 4751	VARIABLE RESISTOR
	OR 610 019 3338	VR B-1K
	OR 610 019 3345	VR B-1K
VR411	610 019 3918	VARIABLE RESISTOR B-20K
	OR 610 020 4805	VR B-20K
	OR 610 019 3451	VR B-20K
	OR 610 019 3468	VR B-20K
VR451	610 019 3833	VARIABLE RESISTOR B-200
	OR 610 020 4713	VARIABLE RESISTOR
	OR 610 019 3277	VR B-200
	OR 610 019 3284	VR B-200
VR601	610 019 4021	VARIABLE RESISTOR B-1K

TRANSFORMERS

Ref. No.	Part No.	Description
T381	610 037 7028	S TRANS
T431	610 000 1060	DRIVE TRANS
	OR 610 000 1053	DRIVE TRANS
⚠ T471	610 212 7843	FBT
⚠ T601	610 212 9724	CONVERTER TRANS

COILS

Ref. No.	Part No.	Description
L301	610 030 0903	DELAY LINE
L302	610 029 6480	PEAKING COIL 82UH K
	OR 610 210 3670	PEAKING COIL 82UHK
	OR 610 029 8743	PEAKING COIL 82UH K
L311	610 037 4546	S COIL
L361	610 029 5803	PEAKING COIL 5.6UH J
	OR 610 216 6866	PEAKING COIL 5.6UHJ
	OR 610 029 7760	PEAKING COIL 5.6UH J
L381	610 032 6699	1H DELAYLINE
	OR 610 032 6705	1H DELAYLINE
L382	610 029 5889	PEAKING COIL 8.2UH J
	OR 610 029 7883	PEAKING COIL 8.2UH J
	OR 610 216 6927	PEAKING COIL 8.2UHJ
L431	610 078 4635	PIPECORE
L432	610 078 4635	PIPECORE
L443	610 031 1138	INDUCTOR
L444	610 000 7635	LINEARITY COIL
L451	610 031 3354	PEAKING COIL
	OR 610 210 3908	PEAKING COIL 33UHK
	OR 610 031 5327	PEAKING COIL 33UH K
L602	610 217 3000	INDUCTOR
L651	610 079 0056	BEAD CORE

DIODES

Ref. No.	Part No.	Description
D391	407 005 4208	DIODE DS442S2
	OR 408 008 2406	DIODE 1N4148
	OR 407 013 1206	DIODE 1S1555
	OR 407 013 4207	DIODE 1S2076
	OR 407 013 7109	DIODE 1S2473
D392	407 048 6900	ZENER DIODE EQA02-12A
	OR 407 048 7105	ZENER DIODE EQA02-12B
D395	407 005 4208	DIODE DS442S2
	OR 408 008 2406	DIODE 1N4148
	OR 407 013 1206	DIODE 1S1555
	OR 407 013 4207	DIODE 1S2076
	OR 407 013 7109	DIODE 1S2473
D451	407 005 7308	DIODE EM01Z
D452	407 005 4208	DIODE DS442S2
	OR 408 008 2406	DIODE 1N4148
	OR 407 013 1206	DIODE 1S1555
	OR 407 013 4207	DIODE 1S2076
	OR 407 013 7109	DIODE 1S2473
D471	407 011 3004	DIODE S5277B
	OR 408 009 9404	DIODE 1N4002ID
D601	407 006 6300	DIODE ERC05-10B
	OR 407 009 6901	DIODE RM11C
	OR 407 064 6908	DIODE TVR4N(X)
D602	407 006 6300	DIODE ERC05-10B
	OR 407 009 6901	DIODE RM11C
	OR 407 064 6908	DIODE TVR4N(X)
D603	407 006 6300	DIODE ERC05-10B
	OR 407 009 6901	DIODE RM11C
	OR 407 064 6908	DIODE TVR4N(X)
D604	407 006 6300	DIODE ERC05-10B
	OR 407 009 6901	DIODE RM11C
	OR 407 064 6908	DIODE TVR4N(X)
D607	407 007 6606	DIODE ES1
	OR 407 007 6903	DIODE ES1Z
D608	407 005 4208	DIODE DS442S2
	OR 408 008 2406	DIODE 1N4148
	OR 407 013 1206	DIODE 1S1555
	OR 407 013 4207	DIODE 1S2076
	OR 407 013 7109	DIODE 1S2473
D609	408 008 2406	DIODE 1N4148
	OR 407 013 1008	DIODE 1S1553

Ref. No.	Part No.	Description
	OR 407 013 4306	DIODE 1S2076A
	OR 407 013 6508	DIODE 1S2471
D611	407 048 1806	ZENER DIODE EQA02-06A
	OR 407 048 2001	ZENER DIODE EQA02-06B
D612	407 048 2407	ZENER DIODE EQA02-06E
D614	407 007 7405	DIODE EU1
D651	407 007 6606	DIODE ES1
	OR 407 007 6903	DIODE ES1Z
D652	407 007 6606	DIODE ES1
	OR 407 007 6903	DIODE ES1Z
D653	407 007 7702	DIODE EU2A
	OR 407 064 7004	DIODE 1S1835
D662	407 029 1207	LED SLP-177B-60

MISCELLANEOUS

Ref. No.	Part No.	Description
F601A	610 012 4356	FUSE CLIP
	OR 610 212 8543	FUSE CLIP
	OR 610 014 8956	FUSE CLIP
F601B	610 012 4356	FUSE CLIP
	OR 610 212 8543	FUSE CLIP
	OR 610 014 8956	FUSE CLIP
D662A	610 222 0322	LED HOLDER-G2CA-A
	OR 610 210 6817	LED HOLDER-G2CA
⚠ F601	423 006 1701	FUSE 250V 2A
	OR 423 006 1909	FUSE 250V 2A
F601C	610 217 0863	FUSE LABEL-G2CH
IC451A	610 081 9535	RADIATOR 88N-C
IC451B	411 045 6702	SCR PAN+SW 3X8
IC451C	411 004 4404	NUT HEX 3
	OR 411 054 7509	NUT HEX 3
IC451D	610 077 7781	SILICON GREASE
KAP	610 013 8445	1P JACK
KDY1P	610 014 3364	M/C TERMINAL PLUG
KDY3P	610 014 3364	M/C TERMINAL PLUG
KDY4P	610 014 3364	M/C TERMINAL PLUG
KDY5P	610 014 3364	M/C TERMINAL PLUG
KG1P	610 014 3364	M/C TERMINAL PLUG
KG2P	610 014 3364	M/C TERMINAL PLUG
KSP	610 012 3311	WIRE HOLDER 5P
KTP	610 012 3298	WIRE HOLDER 3P
LF601	610 031 6003	LINE FILTER
	OR 610 031 6027	LINE FILTER
PCB1	610 129 7875	WIRE HOLDER-LFL
PCB2	610 134 1721	WIRE HOLDING HOOK-RKE
PCB3	610 129 7875	WIRE HOLDER-LFL
PS601	408 000 3906	TH PTH451A13BG180M270
	OR 408 003 6805	THERMISTOR 902P44E180MR14
Q432A	610 081 9528	RADIATOR 88N-D
Q432B	610 077 7781	SILICON GREASE
Q432C	411 045 2803	SCR PAN+SW 3X12
Q432D	411 004 4404	NUT HEX 3
	OR 411 054 7103	NUT HEX 3
Q601A	610 091 6340	RADIATOR 88N-A
Q601B	610 134 1721	WIRE HOLDING HOOK-RKE
Q601D	411 045 2803	SCR PAN+SW 3X12
Q601E	411 004 4404	NUT HEX 3
	OR 411 054 7509	NUT HEX 3
Q601G	610 077 7781	SILICON GREASE
Q601I	412 010 3900	SPECIAL SCREW
SW391	610 011 4227	LEVER SWITCH
SW451	610 011 2728	LEVER SWITCH
⚠ SW601	610 212 7133	SWITCH
TE1	610 014 3364	M/C TERMINAL PLUG
TP1	610 014 3364	M/C TERMINAL PLUG
TP27	610 014 3364	M/C TERMINAL PLUG
TP28	610 014 3364	M/C TERMINAL PLUG
TP32	610 014 3364	M/C TERMINAL PLUG
TP34	610 014 3364	M/C TERMINAL PLUG
TP35	610 014 3364	M/C TERMINAL PLUG
TP50	610 014 3364	M/C TERMINAL PLUG
TP51	610 014 3364	M/C TERMINAL PLUG
XT1	610 014 3364	M/C TERMINAL PLUG
XT2	610 014 3364	M/C TERMINAL PLUG
X321	610 012 0495	CRYSTAL OSCILLATOR

Ref.No.	Part No.	Description
	OR 610 012 0501	CRYSTAL OSCILLATOR
	OR 610 204 4188	CRYSTAL OSCILLATOR
	OR 610 012 0525	CRYSTAL OSCILLATOR
X421	610 012 2017	CERAMIC OSCILLATOR

610 212 6051 (SOCKET UNIT-A5HA) UB1295

TRANSISTORS

Ref.No.	Part No.	Description
Q701	406 000 5104	TR 2SC2229-O(SAN-2)
	OR 406 000 5203	TR 2SC2229-Y(SAN-2)
	OR 405 040 5600	TR 2SC2228-D
	OR 405 029 6901	TR 2SC2228-E
Q702	406 000 5104	TR 2SC2229-O(SAN-2)
	OR 405 040 5600	TR 2SC2228-D
	OR 405 029 6901	TR 2SC2228-E
	OR 406 000 5203	TR 2SC2229-Y(SAN-2)
Q703	406 000 5104	TR 2SC2229-O(SAN-2)
	OR 406 000 5203	TR 2SC2229-Y(SAN-2)
	OR 405 040 5600	TR 2SC2228-D
	OR 405 029 6901	TR 2SC2228-E

CAPACITORS

Ref.No.	Part No.	Description		
C701	403 069 0507	CERAMIC	1000P K	50V
C702	403 069 0507	CERAMIC	1000P K	50V
C703	403 069 0507	CERAMIC	1000P K	50V
C704	403 077 2708	CERAMIC	1000P P	2K
	OR 403 175 3409	CERAMIC	1000P P	2K
C706	403 075 9006	CERAMIC	150P K	500V

RESISTORS

Ref.No.	Part No.	Description		
R701	401 025 1308	CARBON	150 JA	1/6W
R702	401 026 9303	CARBON	47 JA	1/6W
R703	401 025 1308	CARBON	150 JA	1/6W
R704	401 025 1308	CARBON	150 JA	1/6W
R705	401 009 6602	CARBON	3.3K JA	1/2W
R706	401 009 6602	CARBON	3.3K JA	1/2W
R707	401 009 6602	CARBON	3.3K JA	1/2W
R708	401 058 9807	OXIDE-MT	12K JA	1W
R709	401 058 9807	OXIDE-MT	12K JA	1W
R710	401 058 9807	OXIDE-MT	12K JA	1W
R715	401 057 7507	OXIDE-MT	0.82 JA	1W

VARIABLE RESISTORS

Ref.No.	Part No.	Description
VR701	610 210 5841	VR B-100
	OR 610 019 3611	VR B-100
VR702	610 210 5858	VR B-10K
	OR 610 019 3673	VR B-10K
VR703	610 210 5858	VR B-10K
	OR 610 019 3673	VR B-10K
VR704	610 210 5841	VR B-100
	OR 610 019 3611	VR B-100
VR705	610 210 5858	VR B-10K
	OR 610 019 3673	VR B-10K

COILS

Ref.No.	Part No.	Description
L701	610 029 6008	PEAKING COIL 120UHK
	OR 610 210 3403	PEAKING COIL 120UHK
	OR 610 029 8200	PEAKING COIL 120UH K

MISCELLANEOUS

Ref.No.	Part No.	Description
K701	610 010 3627	CRT SOCKET

(OUT OF CIRCUIT BOARDS)

PICTURE TUBE

Ref.No.	Part No.	Description
⚠ Q901	413 006 7803	CRT A22JCH00X

RESISTORS

Ref.No.	Part No.	Description		
R901	401 022 6801	CARBON	75 JA	1/4W

TRANSFORMERS

Ref.No.	Part No.	Description
T471B	610 013 7882	TERMINAL SOCKET-L

COILS

Ref.No.	Part No.	Description
⚠ L901	610 222 2494	DEGAUSSING COIL
⚠ L902	610 212 7799	DEFLECTION YOKE

MISCELLANEOUS

Ref.No.	Part No.	Description
KUP	610 014 2886	BOAD IN CONNECTOR
K901	610 013 9701	BNC TYPE CONNECTOR
K902	610 013 9701	BNC TYPE CONNECTOR
Q901AT1	610 116 5082	DY SPACER-B2EA
	OR 610 215 8571	DY SPACER-DAHJ
	OR 610 154 7031	DY SPACER-B8ZA
Q901AT2	610 116 5082	DY SPACER-B2EA
	OR 610 215 8571	DY SPACER-DAHJ
	OR 610 154 7031	DY SPACER-B8ZA
Q901AT3	610 116 5082	DY SPACER-B2EA
	OR 610 215 8571	DY SPACER-DAHJ
	OR 610 154 7031	DY SPACER-B8ZA
SW901	610 011 2452	SLIDE SWITCH
T471C	610 155 9720	LEAD HOLDER-SMA
⚠ W901	610 011 7099	AC CORD
	OR 610 011 9734	AC CORD
	OR 610 011 9765	AC CORD
W902	610 214 5830	GND CONNECTOR-A5HA
W903	610 217 2966	CABLE

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